

will be especially important to collect males at the type localities of those *Appaleptoneta* species based only on females.

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CHINESE SOFTSHELL TURTLE (*PELODISCUS SINENSIS*) IN THE POTOMAC RIVER AND NOTES ON EASTERN SPINY SOFTSHELLS (*APALONE SPINIFERA*) IN NORTHERN VIRGINIA -- Two recent observations of softshell turtles from the Potomac and Occoquan rivers, Fairfax County, Virginia, indicate that this group of vertebrates may have been introduced into northern Virginia. One is an Asian species, whereas the other is North American, but not native to northern Virginia.

On 3 August 2006, a *Pelodiscus sinensis* (Chinese Softshell; Fig. 1) was observed on a low sloping, sand and gravel bank in a bay of the Potomac River at Dyke Marsh along the Haul Road in Fairfax County (77° 03' 0.48" W, 38° 46' 25.57" N). It disappeared into nearby grassy cover upon closer approach by the observer, after being photographed. On 21 July 2007, a fisherman caught a juvenile female *Apalone spinifera* (Fig. 2) in the Occoquan River (Fairfax County/Prince William County line) near the marina approximately 9 km from its confluence with the Potomac (77° 15' 03.38" W, 38° 40' 38.21" N). The turtle was brought to the nature center at Fountain Head Regional Park. Additional, unverified sightings of *A. spinifera* by boaters in this area were reported to Ben Fleming, park naturalist, after the first one was captured (B. Fleming, pers. comm.). The Occoquan River site is well outside of the natural range of this species in southwestern Virginia (Mitchell & Reay, 1999).

The closest known population of Eastern Spiny Softshells, also an introduced population, is in southern New Jersey in the Maurice River system (Conant & Collins, 1991). Mansueti & Wallace (1960) reported on an attempt to establish this species in the Potomac River below the dam at Cumberland, Maryland, in 1883. Harris (2004) noted recently that the status of a putative population in the canal below Great Falls on the Potomac River, Montgomery County, Maryland, is unknown, as is the fate of the 1883 introduction.

In Virginia, *Apalone spinifera spinifera* is native only to the Clinch and Holston river drainages in the southwestern portion of the Commonwealth (Mitchell, 1994; Mitchell & Reay, 1999). The species is listed in Virginia as status undetermined and of moderate conservation need (Mitchell, 1991; VA Dept. Game & Inland Fisheries <http://www.bewildvirginia.org/species/reptiles.pdf>, accessed 24 December 2007). Introductions have been reported from Bull Run Creek (an Occoquan tributary), Fairfax County, in 1982 (Mitchell, 1994) and in Lake Whitehurst in the City of Norfolk (Mitchell & Southwick, 1993).



Fig. 1. Chinese Softshell (*Pelodiscus sinensis*) at Dyke Marsh, Potomac River, 3 August 2006 (Photos: Ed Eder).

The turtles observed in the Potomac and Occoquan rivers may have been released from an Oriental food market in northern Virginia or Washington, DC. Such markets routinely sell turtles despite federal and state regulations. On 8 December 2007, one of us (PPvD) observed 7 live *Pelodiscus sinensis* offered for sale in the fresh fish/seafood section of a supermarket in Merrifield, Fairfax County, Virginia, which caters mainly to Oriental communities. These turtles showed standard Asian farm-product morphology, size (ca. 12-15 cm carapace length), and weight (ca. 1 US lb.). They were advertised at US \$11.99 per pound. The adjacent tank contained American Bullfrogs (*Rana catesbeiana*, apparently from an Asian farm), Yellow/swamp Eels (*Fluta alba*), and White Eels (*Anguilla* sp.), all of which represent potential invasives. Perhaps well-meaning people have purchased turtles in the markets to prevent their presumed slaughter and released them in nearby rivers. A case in point is the purchase of animals, including turtles, from an Oriental food market in New York and their release into the Passaic River, New Jersey, by people concerned about their welfare (Anonymous, 2007).

Harris (2004) reported on an uncatalogued specimen of *P. sinensis* in the collection of the Natural History Society of Maryland that was found dead on 8 December 2003 along the Potomac River at National

Colonial Farms Museum, Accokeek, Prince Georges County, Maryland. This location is 21 km downstream from the Dyke Marsh site. Thus, this introduced Asian softshell has apparently been released and perhaps present in the Potomac River for at least 3 years.

Judging from the available photographs, the Chinese Softshell observed at Dyke Marsh does not exhibit every feature characteristic of the standard farmed version derived mainly from Taiwanese stock, but partly resembles a North Vietnamese/South Chinese animal in its possession of pigmented rosettes on the carapace.



Fig. 2. *Apalone spinifera* from the Occoquan River, 21 July 2007 (Photos: Benjamin Fleming).

Could the way in which these turtles were shipped to the United States reveal how the Northern Snakehead fish (*Channa argus*), which occurs in the same region in Asia (<http://www.invasivespeciesinfo.gov/aquatics/snakehead.shtml>, accessed 10 December 2007), entered into Maryland and Virginia streams (Orrell & Weigt, 2005)? And could it be indicative of a large-scale illegal import of Asian species for the Asian food markets in the mid-Atlantic region? The introduction of an Asian turtle into Virginia waters via commercial food market routes suggests that other introduced species may be discovered in Virginia and Maryland in the future, especially if they are able to tolerate temperate zone climates like *P. sinensis* can. *Pelodiscus sinensis* is listed as Vulnerable in its native range (<http://www.iucnredlist.org/>, accessed 16 December 2007).

Such periodic intentional or unintentional releases may result in the establishment of softshell turtle populations in the Potomac and Occoquan rivers. Multiple releases of *P. sinensis* increase the probability that a reproducing population has been or is likely to become established in the Potomac River. Additional data are needed to determine whether individuals are reproducing. Observations of nesting females and hatchlings would confirm establishment of breeding populations.

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